



# **Educating the Future Nuclear Workforce: NRC's Nuclear Education Grant Program**

**Briefing for  
Blue Ribbon Commission on  
America's Nuclear Future**

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# Where We Were

- **1960's – 1980's**
  - **~64 University Research Reactors**
  - **~50+ Nuclear Engineering Programs**
  - **1800+ Students**
  - **Ordering and Building NPP's**

# Origins of Current Support for Nuclear Engineering Education

- **During 1990's, plight of nuclear engineering education was acknowledged and support initiated**
- **“Nuclear Engineering Education: Cause for Concern” (Nuclear Energy Agency, Paris 1998-2000) was a seminal document**
- **DOE-NE Programs developed rapidly in late 1990's**

# Federal Support for Nuclear Education



# Growth, Hiatus, Transfer, Resumption

- **Late 1990's – 2006: DOE “University Programs” grow from \$3M to \$30M/year**
- **2007: DOE suspends most direct support to nuclear engineering education**
- **2008: Congress “transfers” parts of the former DOE program to NRC**
- **2009: DOE restarts their program to support universities using a percentage “tax” on NE’s research funds**

# Current NRC Grant Program

# Program Authorization –Curriculum Development (\$5M)

- **Energy Policy Act of 2005**

**“...to support courses, studies, training, curricula, and disciplines pertaining to nuclear safety, nuclear security, nuclear environmental protection, and other fields that the Commission determines to be critical to NRC’s regulatory mission.”**

## Program Authorization - \$15M Program

- **Yearly Congressional Language (2008 on)**
- **“Funding ....includes \$15,000,000 to support education in nuclear science, engineering, and related trades to develop a workforce capable of the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials.”**
- **Benefit the nuclear sector broadly, not primarily NRC**

## Grant Specifics (\$20M)

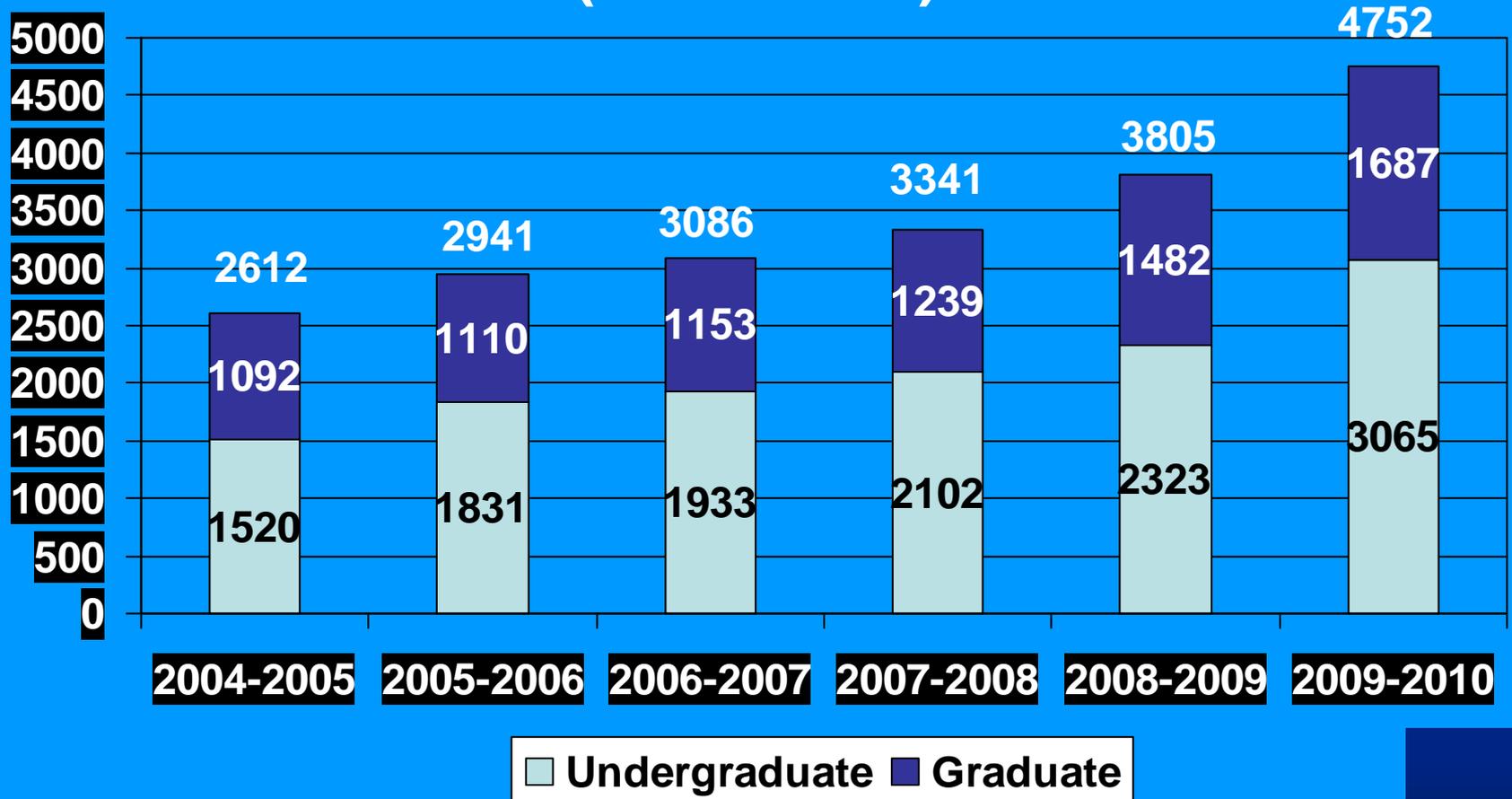
- Scholarships – 2 years, \$10,000 per student per year, awarded to institution (\$200,000)
- Fellowships – 4 years, \$50,000 per student per year, awarded to institution (\$400,000)
- Faculty Development – 3 years, \$150,000 per year plus institution match (\$450,000 + \$150,000)
- Trade schools/community colleges – 1 year, \$10,000 per student (\$150,000)
- Curriculum development - ~\$200,000 over 2 years

## **Supporting the Pipeline: The NRC Service Agreement**

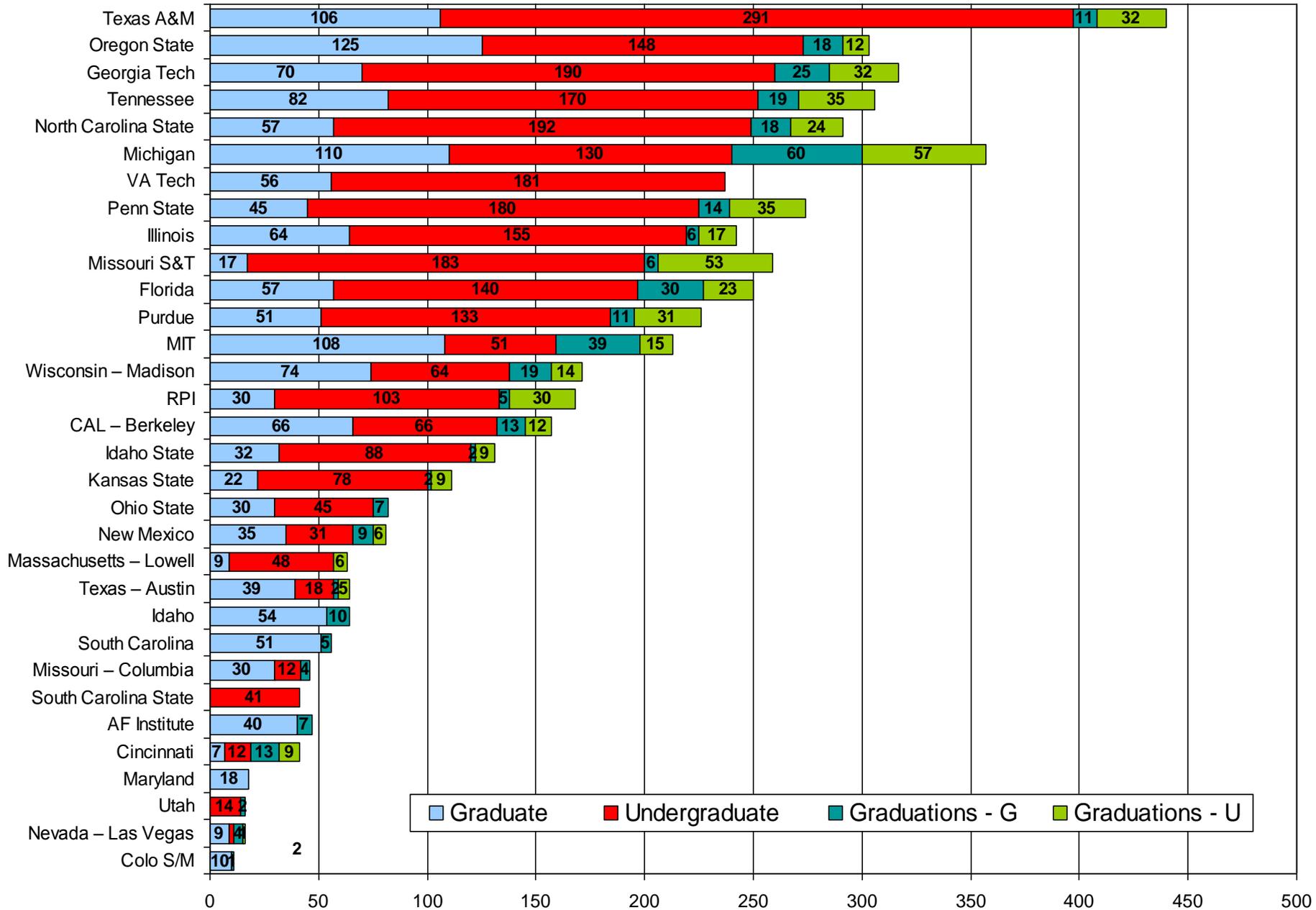
- **Each scholarship and fellowship recipient must serve six (6) months in nuclear-related employment for each year or partial year of support**
- **Failure to comply, absent a waiver, will trigger repayment from the recipient**



# NE Enrollment Trends (2004-2010)



# Nuclear Engineering Enrollments and Graduations - 2009-2010



# Significant Developments

- **Support over 500 students annually**
- **Support 108 institutions in 33 states, DC and Puerto Rico**
- **Emphasize participation of:**
  - **Trade schools and community colleges**
  - **Minority-serving institutions**
  - **Health physics and radiochemistry**
- **Encourage leveraging and partnering**

# What's Working

- **Student population growing**
- **New university nuclear programs beginning**
- **Government grant funds leveraged**
- **Partnering occurring**
- **Increasing interest by trade schools and community colleges**

# Observations

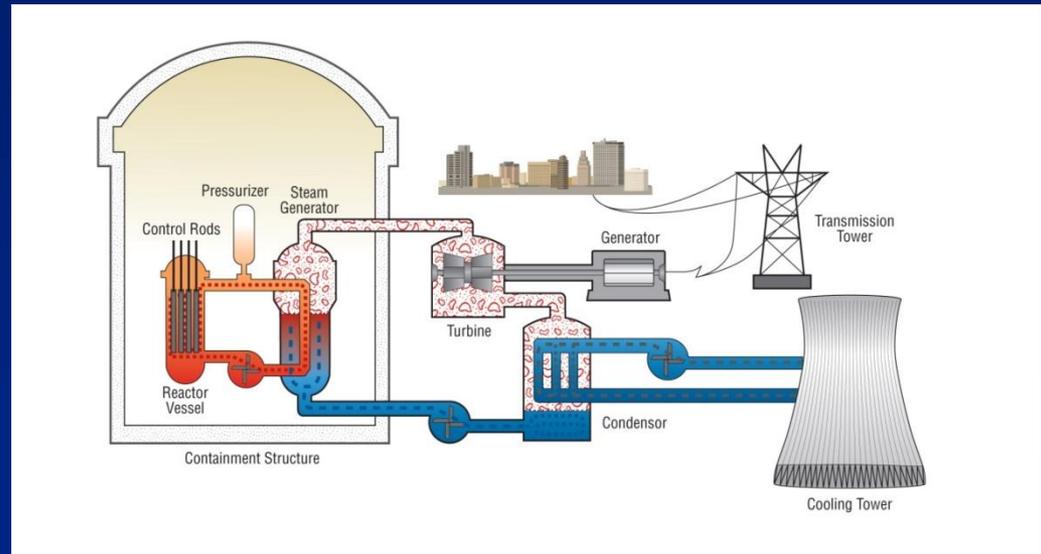
- **Applications far exceed available funds**
- **The greatest near-term workforce needs appear to be in the trade and craft areas**
- **Outreach to pre-college students enables students to make informed decisions about pursuing the study of nuclear technology**
- **Success may depend, for the foreseeable future, upon continued government investment in nuclear education**

# Hurdles

- **Ability to better assess the workforce in terms of personnel and physical infrastructure needs**
- **Limited scope/flexibility of current NRC program**
- **Annual funding uncertainty**
- **Coordination among universities to avoid duplication of effort**
- **Outreach**

## Outreach Example: The Harnessed Atom: *High School Honors Edition*

- Helps ensure that United States maintains the technical skill base required to support our energy infrastructure
- Increases awareness at the pre-college level for students interested in sciences and engineering, including nuclear engineering
- Helps high school students make informed choices about college majors and career options
- Supports NRC and DOE efforts to foster education and understanding of energy technologies and options



# Conclusions

- **Federal nuclear education programs appear to be developing a sufficient pipeline of personnel to meet U.S. needs**
- **Funding continuity will instill confidence in Federal commitment to nuclear education**
- **Absent retirements and new builds, oversupply could occur in some areas**
- **“Supply and Demand” survey being conducted by DOE should help identify where education resources should be focused**

**Thank you**

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